

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Inventor: Katsuhiko HIRAMATSU et al.

Art Unit 2611

Appln. No.: 10/069,642

Exr. F. Aghdam

Filed: February 28, 2002

Conf. No. 3592

For: COMMUNICATION TERMINAL APPARATUS AND BASE STATION  
APPARATUS

RESPONSE UNDER 37 CFR § 1.116

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In response to the Final Rejection dated October 31, 2007, the Applicants hereby petition for a three-month extension of time and respectfully request reconsideration and allowance of the application in light of the following remarks.

Claims 22, 23, and 27 stand rejected, under 35 USC §103(a), as being unpatentable over Parkvall et al. (US 6,542,736) in view of Nakamura et al. (US 6,782,035). The Applicants respectfully traverse these rejections based on the points set forth below.

Claim 22 defines a communication terminal apparatus that receives transmit power information for a control channel and a data channel from a base station apparatus. The communication terminal apparatus estimates, based on the received transmit power information and the measured quality of a received control channel signal, the reception quality of the data channel signal.

The Final Rejection acknowledges that Parkvall and Nakamura do not suggest the claimed subject matter in which a communication apparatus receives transmit power information for both a control channel and a data channel (see Final Rejection, last paragraph of page 2 through line 2 of page 3). With respect to this claimed limitation, the Final Rejection proposes that the transmit power information of the data channel suggested by Parkvall and Nakamura may be indirectly determined from received information of a control channel's transmit power (see page 2, lines 3-7 of last paragraph). Moreover, the Final Rejection proposes that a skilled artisan would recognize the advantage of not communicating the transmit power information of the data channel to a communication apparatus, since this information may be determined indirectly from information that is transmitted and the indirect determination of the information reduces hardware complexity (see page 3, lines 9-15). Thus, the Final Rejection not only acknowledges that Parkvall and Nakamura do not suggest the claimed subject matter, the Final Rejection proposes that the applied references teach away from it (i.e., the references motivate a skilled artisan to avoid the claimed subject matter).

Accordingly, the Applicants respectfully submit that Parkvall and Nakamura, considered individually or in combination, do not render obvious the subject matter defined by claim 22. Independent claim 27 similarly recites the above-mentioned subject matter distinguishing apparatus claim 22 from the applied references, but with respect to a method. Therefore, allowance of claims 22 and 27 and dependent claim 23 is warranted.

To promote a better understanding of the differences between the claimed subject matter and the applied references, the Applicants provide the following additional remarks.

The Final Rejection proposes that when the transmit power value of a control channel is known, the transmit power value of a data channel signal is also known and cites Nakamura's description of Fig. 26 as evidence of the inference (see Final Rejection page 2, last seven lines, and page 3, lines 1-2). However, this inference holds true, in the context of the claimed subject matter, only when the receiving apparatus knows the type of modulation applied to each of the data channel and the control channel, which is the circumstance disclosed by Nakamura.

More specifically, Nakamura discloses employing QPSK as the modulation scheme in both an uplink and a downlink (see Nakamura, col. 31, line 54). Accordingly, Nakamura employs only QPSK as the modulation scheme for both the data portion and the pilot portion of the downlink, and both the base station apparatus and communication terminal apparatus recognize that QPSK is the modulation scheme for both portions. When the modulation schemes for both the data portion and the pilot portion are known, it is possible to estimate the transmit power value of the data portion from the transmit power value of the pilot portion and the reception quality of the pilot portion. For example, by calculating the difference between an average received power value of the pilot portion and an average received power value of the data portion, it is possible to estimate the transmit power value of the data portion relative to the transmit power value of the pilot portion.

Moreover, QPSK employs signal points having equal absolute amplitudes at different phases and does not have signal points with different amplitudes at the same phase. Thus, Nakamura's use of QPSK readily supports determining the transmit power value of a data channel signal from the transmit power value of a control channel signal when both channels employ QPSK modulation.

On the other hand, with the claimed invention, the modulation scheme for the data channel signal is not known by both a base station apparatus and a communication terminal apparatus and modulation schemes of 16QAM, 64QAM, and the like, which have signal points with a plurality of amplitudes at the same phase, may be used as the modulation scheme for the data channel signal. In this circumstance, it is not possible to determine the transmit power value of the data channel signal from the transmit power value of the control channel signal. For example, with the claimed invention, if QPSK is used as the modulation scheme for the control channel signal and one of QPSK, 16QAM, and 64QAM is selected as the modulation scheme for the data channel signal, which one of QPSK, 16QAM, and 64QAM is selected as the modulation scheme for the data channel signal is not known, and there is a possibility that modulation schemes of 16QAM or 64QAM of signal points of a plurality of amplitudes at the same phase are selected.

Stated more simply, if the receiving apparatus does not know which type of modulation is applied to the data channel, the receiver cannot determine the transmit power of the data channel because each of the prospective modulation schemes may have signal points of equal amplitude to those in other modulation schemes. For example, QPSK may have signal points with amplitudes equal to the amplitudes of signal points in 16QAM or 64QAM, but both 16QAM and 64QAM have additional signal points with absolute amplitudes that differ from the amplitudes of the QPSK signal points.

Therefore, with the claimed invention, the communication terminal apparatus is not able to determine the transmit power value of the data channel signal from the transmit power value of the control channel signal, and so, without obtaining information of the transmit power value

of the data channel signal from the base station apparatus, the communication terminal apparatus is not able to estimate the reception quality of the data channel signal.

It is submitted that Parkvall does not supplement the teachings of Nakamura in this regard.

Accordingly, Parkvall and Nakamura, considered alone or together, do not disclose or suggest the subject matter, recited in independent claims 22 and 27, of receiving information of the transmit power value of a data channel signal transmitted from a base station apparatus. Therefore, allowance of claims 22 and 27 and dependent claim 23 is deemed to be warranted.

In view of the above, it is submitted that this application is in condition for allowance and a notice to that effect is respectfully solicited.

If any issues remain which may best be resolved through a telephone communication, the Examiner is requested to telephone the undersigned at the local Washington, D.C. telephone number listed below.

Respectfully submitted,

/James Edward Ledbetter/

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JEL/DWW/att

James E. Ledbetter  
Registration No. 28,732

Attorney Docket No. 009289-02131  
Dickinson Wright PLLC  
1901 L Street, NW, Suite 800  
Washington, DC 20036  
Telephone: (202) 659-6960  
Facsimile: (202) 659-1559